WHAT IS CLAIMED IS:

1. A method of preparing a positive active material for a rechargeable lithium battery comprising:

a) introducing into a mixer a lithiated compound and either an organic solution including a coating-element source or an aqueous solution including a coating-element source;

b) coating the lithiated compound with the organic solution or the aqueous solution, while increasing the ambient temperature and mixing; and

c) heat-treating the coated lithiated compound to form a surface-treatment layer on the surface of the lithiated compound.

2. The method of preparing a positive active material of claim 1 wherein the lithiated compound is one or more lithiated compounds selected from the group consisting of compounds represented by the formulas 1 to 11:

$Li_xMn_{1-y}M'_yA_2$ (1)

$Li_xMn_{1-y}M'_yO_{2-z}X_z$ (2)

$Li_xMn_2O_{4-z}A_z$ (3)

$Li_xMn_{2-y}M'_yA_4$ (4)

$Li_xM_{1-y}M''_yA_2$ (5)

$Li_xMO_{2-z}A_z$ (6)

$Li_xNi_{1-y}Co_yO_{2-z}A_z$ (7)

$Li_xNi_{1-y-z}Co_yM''_zA_\alpha$ (8)

$Li_xNi_{1-y-z}Co_yM''_zO_{2-\alpha}X_\alpha$ (9)

$Li_xNi_{1-y-z}Mn_yM'_zA_\alpha$ (10)

$Li_xNi_{1-y-z}Mn_yM'_zO_{2-\alpha}X_\alpha$ (11)

wherein:

$0.95 \leq x \leq 1.1$, $0 \leq y \leq 0.5$, $0 \leq z \leq 0.5$, $0 \leq \alpha \leq 2$,

M is Ni or Co,

M' is one or more elements selected from a group consisting of Al, Ni, Co, Cr, Fe, Mg, Sr, V, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er,

Tm, Yb, Lu, Ac, Th and Pa,

M" is one or more elements selected from a group consisting of Al, Cr, Mn, Fe, Mg, Sr, V, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ac, Th and Pa,

A is selected from the group consisting of O, F, S and P, and

X is selected from the group consisting of F, S, and P.

3. The method of preparing a positive active material of claim 1 wherein the coating step further comprises introducing a flushing gas into the mixer.

4. The method of preparing a positive active material of claim 1 wherein the coating step is performed under vacuum.

5. The method of preparing a positive active material of claim 1 wherein the temperature of the mixer is kept in the range of 50°C to 100°C.

6. The method of preparing a positive active material of claim 1 wherein the concentration of the coating element source in the organic or aqueous solution ranges from 0.1 to 50 wt%.

7. The method of preparing a positive active material of claim 6 wherein the concentration of the coating element source in the organic solution or the aqueous solution ranges from 1 to 20 wt%.

8. The method of preparing a positive active material of claim 1 wherein the organic solution or aqueous solution comprises at least one coating element selected from the group consisting of Mg, Al, Co, K, Na, Ca, Si, Ti, Sn, V, Ge, Ga, B, As and Zr.

9. The method of preparing a positive active material of claim 8, wherein the coating element is preferably Al or B.

10. The method of preparing a positive active material of claim 1 wherein the heat-treating process is performed at a temperature ranging from 100 to 1000°C.

11. The method of preparing a positive active material of claim 1 wherein the heat-treating process is performed under flowing air for 1 to 20 hours.

12. A method of preparing a positive active material for a rechargeable lithium battery comprising:

a) introducing a lithiated compound and either an organic solution including a coating-element source or an aqueous solution including a coating-element source to a mixer, the lithiated compound being selected from the group consisting of lithium-cobalt chalcogenide, lithium-manganese chlcogenide, lithium-nickel chalcogenide and lithium-nickel-manganese chalcogenide;

b) coating the compound with the organic solution or aqueous solution, while increasing the temperature of the mixer and mixing; and

c) heat-treating the coated compound to form a surface-treatment layer on the surface of the compound.

13. The method of preparing a positive active material of claim 12 wherein the coating step further comprises introducing a flushing gas into the mixer.

14. The method of preparing a positive active material of claim 12 wherein the coating step is performed under vacuum.

15. The method of preparing a positive active material of claim 12 wherein the temperature of the mixer is kept in the range of 50°C to 100°C.

16. The method of preparing a positive active material of claim 12 wherein the concentration of the coating element source in the organic solution or the aqueous solution ranges from 0.1 to 50 wt%.

17. The method of preparing a positive active material of claim 16 wherein the concentration of the coating element source in the organic solution or the aqueous solution ranges from 1 to 20 wt%.

18. The method of preparing a positive active material of claim 12 wherein the organic solution or aqueous solution comprises at least one coating element selected from the group consisting of Mg, Al, Co, K, Na, Ca, Si, Ti, Sn, V, Ge, Ga, B, As and Zr.

19. The method of preparing a positive active material of claim 18, wherein the coating element is Al or B.

20. The method of preparing a positive active material of claim 12, wherein the heat-treating process is performed at a temperature ranging from 100 to 1000°C.

21. The method of preparing a positive active material of claim 12 wherein the heat-treating process is performed under flowing air for 1 to 20 hours.

22. A method of preparing a positive active material for a rechargeable lithium battery comprising:

a) introducing a lithiated compound and either an organic solution including an Al source or a B source or an aqueous solution including an Al source or a B source to a mixer, the lithiated compound being selected from the group consisting of lithium-cobalt chalcogenide, lithium-manganese chalcogenide, lithium-nickel chalcogenide and lithium-nickel-manganese chalcogenide;

b) coating the compound with the organic solution or aqueous solution, while increasing the temperature of the mixer and mixing; and

c) heat-treating the coated compound to form an Al_2O_3 or B-included oxide surface-treatment layer on the surface of the compound.

23. The method of preparing a positive active material of claim 22 wherein the coating step further comprises introducing a flushing gas into the mixer.

24. The method of preparing a positive active material of claim 22 wherein the coating step is performed under vacuum.

25. The method of preparing a positive active material of claim 22 wherein the temperature of the mixer is kept in the range of 50°C to 100°C.

26. The method of preparing a positive active material of claim 22 wherein the concentration of Al or B in the organic solution or the aqueous solution ranges from 0.1 to 50 wt%.

27. The method of preparing a positive active material of claim 26 wherein the concentration of the coating element in the organic solution or the aqueous solution ranges from 1 to 20 wt%.

28. The method of preparing a positive active material of claim 22 wherein the heat-treating process is performed at the temperature ranging from 100 to 1000°C.

29. The method of preparing a positive active material of claim 22 wherein the heat-treating process is performed under flowing air for 1 to 20 hours.